

Historic, Archive Document

Do not assume content reflects current scientific knowledge, policies, or practices.

183 E+
venue

March 1943

ET-206

United States Department of Agriculture
Agricultural Research Administration
Bureau of Entomology and Plant Quarantine

COUNTING PLATES FOR USE WITH LOW-POWER MAGNIFICATION

By F. H. Shirck
Division of Truck Crop Insect Investigations

A counting plate for use with binoculars may be made by soldering No. 30 copper wire onto a tin plate in the shape of a spiral (fig. 1), forming a groove 6 to 8 millimeters wide. The plate should be painted some color that will contrast with the objects to be counted. In using the plate, the matter to be examined (e.g., debris containing insect eggs) is scattered over the plate in a thin layer. The count is begun in the middle, the plate being revolved manually as the count proceeds so that the entire length of the groove passes through the field of vision. This device is useful where considerable foreign matter is present, such as sand or weed seeds, or where there is a mixture of similar-appearing objects the differentiation of which requires the use of low-power magnification. It insures that all the material will be examined, and permits an accurate count without necessitating the handling of each individual object counted.

The microscope field should have a diameter of 2 to 3 times the width of the groove in the counting plate. The plate can then be easily controlled without danger of missing a spiral as it is revolved. This device has been used successfully with a magnification of 9 diameters.

The counting plate shown in figure 2 has been used in separating wireworm eggs from soil and counting them under loupe binoculars. It is made from the lid of a 1-pound coffee can. The central part of the lid is cut out, leaving an edge about $\frac{1}{8}$ inch wide. A disk of 40-mesh wire cloth is cut to the exact size needed to fit inside the lid, and is soldered to the inside of the projecting edge. Masking strips of $\frac{1}{2}$ -inch adhesive tape are then affixed to the inner surface of the screen, and spaces of about 1 millimeter are left between the masking strips. Several coats of paint are then sprayed on, forming lines on the screen in the spaces between the masking strips. When the paint is thoroughly dry the strips of tape are removed. The

bottom of the coffee can is cut out, leaving a cylinder to which the disk is attached during the washing process.

In use, the counting plate is fitted tightly to the coffee-can cylinder. The soil containing eggs is emptied into the device, and water is sprayed on through a suitable spray nozzle until the eggs are washed free of soil. If the soil has not been pre-screened it will be advisable to have at hand another sieve of coarser mesh which will allow the eggs to pass through. This may be made by cutting out the top and bottom of a 1-quart can and soldering wire screen over one end of the open cylinder. The screen used should be of a mesh just large enough to let the eggs and fine dirt pass through but to retain all matter larger than the eggs. The soil is flushed through the first sieve into the one illustrated in figure 2.

After the washing is completed the counting plate is taken off and set upon an absorbent towel for a moment to draw out the water remaining in the meshes of the screen. The sample is scanned, and any eggs which are on the lines are pushed into the spaces between (this may be done during the count if desired). The count is then made, by following the spaces between the guide lines. The eggs may be flushed from the plate with the spray and into a pail of water, and kept in a cool place until needed. They will stand submergence for a day or two without injury.

Newly hatched wireworms may also be counted by aid of the counting plate shown in figure 2, but in this case it is best to add a little ether to the soil before attempting the count. Two or three drops of ether to 3 ounces of soil will immobilize the young wireworms for the time required in counting. They survive this treatment without visible injury.

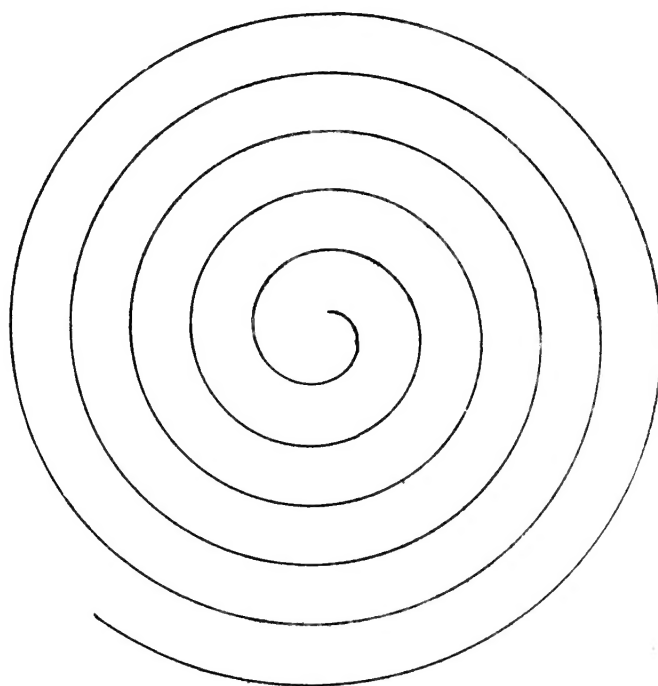
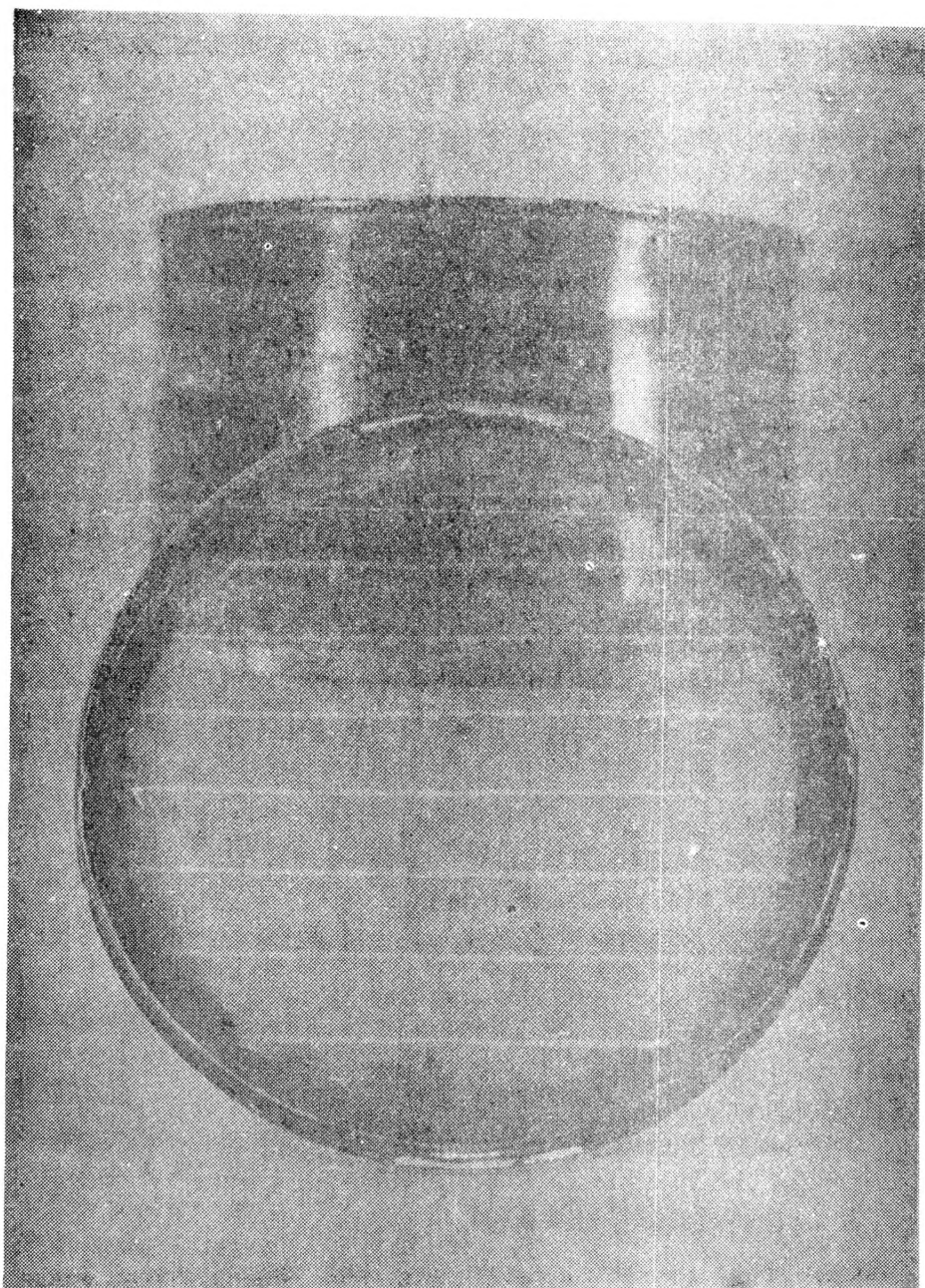


Figure 1.—Form of spiral used on counting plate. Diameter, 7 to 8 cm.



**Figure 2.—Sieve made from 1-pound coffee
can, used for counting wireworm eggs.**

